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ABSTRACT

The study of the mobility of the wood products labor force was made in response to a predicted decline in manpower needs for the wood products industry in western Oregon and western Washington. Variables affecting workers' employability and mobility were analyzed to determine the potential in Oregon for mobility within and out of the industry, the function of the labor market in distributing jobs, and the interface between the labor market and workers' adaptations. Hypotheses dealt with social marginalization, defined as the process of becoming economically obsolete, and job rationing, defined as the process by which one applicant is selected over another for a particular job. Because of the size of the population studied (a longitudinal study of 50) a random sampling of workers, and 20 in-depth profiles of workers); and because of acknowledged missing observations, evidence in some areas was mixed, and further research is planned. Data from the study are tabulated and discussed at length. Additional formal education and high firm seniority seemed to have low value, and results also suggested that although changing jobs can be a rational response to a tight labor market, the practice threatens workers' re-employability. (MDW)

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by

Joe B. Stevens, William W. Pierson,
and David E. Ervin

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ON THE PROCESS AND CONSEQUENCES OF JOB RATIONING IN OREGON'S DECLINING WOOD PRODUCTS INDUSTRY

A substantial decline in manpower needs (-45 percent by the year 2000) has been forecast for the wood products industries of Western Oregon and Western Washington. Despite the reasonably high wages and incomes which now prevail, the low rates of return to measured forms of human capital investment are consistent with the notion of an incipient labor surplus.

Additional formal education may improve a worker's chances of leaving the wood products industry. Within the industry, however, education is generally not important as an income determinant and may even decrease one's chances of effectively coping with unemployment.

The economic returns to additional firm seniority (staying with one's current employer) are probably no higher than 4 to 7 percent per year. As with education, too much seniority may have a deleterious effect on one's ability to cope with unemployment.

Our results to date suggest that job changing, as a means of securing higher pay, may be a very rational response to a crowded and dynamic labor market, in spite of employers' stated preferences for "stable and dependable" workers. There is, therefore, the possibility that workers can lose their economic viability through rational adaptations to the marketplace. If so, the decision context within which they adapt is one in which the basic values and incentives are derived from mainstream society, rather than being indigenous to marginal society.

by Joe B. Stevens, William W. Pierson, and David E. Ervin

ON THE PROCESS AND CONSEQUENCES OF JOB RATIONING IN OREGON'S DECLINING WOOD PRODUCTS INDUSTRY

I. Background

The history of manpower allocation in any geographic region is inextricably linked to the natural resource base of that region. Natural resources and the lure of "wealth" provided the historical incentive for Westward migration--a pull that has ebbed and flowed both internally and externally as a consequence of resource exhaustion, technological change, and shifts in product demand. In some instances, the outcome has been spectacular or picturesque--old mining towns today thrive as tourist meccas--or wait patiently for silver prices to rise. In other instances, the outcome has been almost as spectacular and perhaps not as picturesque, but rather a programmed outcome of corporate and state planning. The vast technological revolution in U.S. agriculture bears witness to this point. Based on time-honored values of competition, equality of opportunity, and the entrepreneurial creed, the adoption of new technology has drastically reduced the need for manpower in agriculture over the last three decades.

A similar phenomenon is underway today in wood products--the mainstay of many rural regions in the Pacific Northwest. Long a viable industry in the region, post-World War II demands for housing accelerated the demand for labor and drew substantial migrants to the region, especially from the border South. Small sawmills proliferated, and small farms became "farm woodlots" when their owners realized that Douglas Fir trees were not "--just something you had to clear before you could farm."

Over the past twenty-five years, a series of forces have nudged--or jolted--the wood products labor force in the Pacific Northwest. Technological change, again programmed by corporate and state action, has diminished the labor input per unit of output, although it has

also expanded total output by allowing more complete utilization of raw materials. Economies of size have been exploited to take advantage of new technologies, with high-cost (and often the more rural) mills the losers. Shifts in locational advantage were felt as Southern plywood production accommodated itself to smaller dimension timber and lower cost labor. Throughout the period, decline in long term harvest levels has been eminent as producers liquidate old-growth stands of timber at a rate in excess of the current growth rate. Softwood timber output from profit/wealth maximizing private producers in Western Oregon and Western Washington has been predicted by the U.S. Forest Service to decline 73 and 58 percent, respectively, by the year 2000 [6]. Despite lobbying by Northwest politicians for additional reforestation funds, the allowable cut on public lands will probably increase only slightly over time. Add to these factors a marked sensitivity (of employment and output) to cyclical changes in the national economy (particularly to increased interest rates and housing starts), and the long-term employment picture can be seen as "up and down, but mostly down". The U.S. Forest Service is now projecting a net decline of about 55,000 wood products jobs in Western Oregon and Western Washington by the year 2000, or a reduction of about 45 percent of current employment.[1/]

Thus, the scene is set for a substantial decline in manpower needs. The decline will probably be irregular, due to the cyclic nature of the industry, thus masking to some degree the secular effect. In Oregon, where we have the most familiarity, the decline will be greatest in the non-metropolitan counties (particularly Southern Oregon and in the Cascade and Coastal ranges) where new sources of jobs are not readily apparent and where political "clout" is not especially robust relative to the more populated areas. Similar patterns might be expected in Washington and Idaho. It is not unrealistic, then, to posit an "Appalachia West", formed from rural, mountainous portions

1/ As an item for comparison, employment in softwoal mining in the Southern Appalachians declined from 203,114 in 1950 to 122,243 in 1957--about the same percentage decline as forecast here, but compressed into a much shorter period [3].

of the Pacific Northwest and Northern California, and increasingly impotent in an economic and political sense.

It was in this context that our study of the mobility of wood products labor was initiated. It was our general hypothesis that rurality of many of these declining areas, concomitant low levels of human capital formation, and lack of employment alternatives are combining to constitute a rather severe labor (and community) adjustment problem. Underlying our concern was an assumption about institutional lags. Although labor shortages and high wages induced migration into the region and the industry in the late Forties, the tide has gradually turned toward a situation of labor surplus. Further, we suspect that in the interim, local institutions have become increasingly oriented to provide a continuing stream of local labor into the wood products industry. This would encompass both formal institutions, particularly the educational system, and informal institutions, particularly inter-generational work patterns. Although depressed labor markets would encourage occupational and geographic mobility and thus work toward an equilibrating direction, these institutional lags provide reason to suspect that equilibration will be slow and painful.

II. Methodology

Our field work has encompassed a variety of procedures including both extensive and intensive data collection, and both longitudinal and "one-shot" approaches. Some of the data will allow inferences to a state-wide population, other data is useful primarily for insights by which we might ask more penetrating questions in the future.

At this point, we have four basic data sources: (1) a longitudinal study of 50 workers unemployed by a 1971 sawmill closure, (2) a state-wide random sampling of workers who left, entered, or remained in the industry in 1972, (3) a set of in-depth profiles of 20 unemployed workers in Lane County, and (4) a comparative analysis of "job rationing

criteria" from samples of employers and workers in Lane County. From these data, we are trying to weave together a collection of systematic insights in three areas; (1) the aggregate potential, in Oregon, for effective occupational mobility out of wood products by workers now in this declining industry, (2) the functioning of the labor market--and its institutional framework--as an allocative device for distributing jobs and incomes in a labor surplus setting, and (3) the interface between the labor market, as an exogenous force impinging on individual workers, and the adaptations made by workers in light of this force. In that our data is not yet completely analyzed, this paper should be viewed as a progress report rather than a final document.

Our research orientation contains both "applied" and "basic" elements, even though we would prefer not to use these terms. The The "applied" focus asks: How "locked in" are the wood products workers? What are the avenues of upward and horizontal occupational mobility? How serious is excess entry of labor relative to replacements needs?

The more "basic" element in the research is derived from a central hypothesis of "social marginalization," as advanced through an on-going regional research project coordinated by the Western Rural Development Center [4]. Briefly stated, social marginalization as viewed as "...an integral, though negative, aspect of the total economic development process whereby individuals, families, communities, classes, and cultures become isolated and enclaved relative to mainstream economic society" [4]. In other words, we are exploring why some people (or groups) are becoming economically obsolete, chronically underemployed, and in the final state--welfare dependent--whereas others are not. The concept implies a dynamic process, and one which is interactive between individuals and the institutions that they deal with (and that deal with them). Finally, the formulation rests on an underlying assumption that "...marginalization is not an aberration, but is rooted in rational (albeit dysfunctional from society's standpoint) economic decision-making" [4].

Our distinction between applied and basic elements, then, rests primarily on an anticipated time frame for utilization of the results, i.e., it will be easier for society to recognize the problem in a narrow sense than in its entirety. The incipient decline of the wood products industry is viewed, by us, as an emerging social problem to which no coordinated public policy is now addressed, at least in Oregon. Instead, traditional value systems and expectations predominate, i.e., workers can, should, and will move to greener pastures when and if their jobs disappear. Our inferences on the current degree of mobility will, we anticipate, identify the degree of severity of the resource adjustment process. Moreover, the usefulness of these inferences, at least to the general public, may be negatively correlated to the degree of sophistication of the analysis. As a case in point, one of our first tasks was to assemble a sampling frame for wood products workers on a state-wide basis. To our chagrin, even the highly cooperative State Employment Division did not have data on how many different people had been employed in the sector in any given year. One thousand dollars and several computer programs later, we were able to derive an estimate (based on a 2 percent random sample of all workers who had any covered employment in SIC's 241, 242, or 243) that 110,581 different workers had earnings in wood products in 1972 (Table 1). This figure is considerably in excess of the average monthly employment of 71,072 workers in the same SIC classes--an easily obtainable set of data. What we have, then, is an estimate that the number of workers during the course of a year exceeded the number of jobs by 56 percent. Admittedly, not all workers were in the job market at all times during the year (an estimated 14,276 were seasonal workers, including many students). Even so, it became apparent early in the research that a high degree of labor mobility exists on the part of wood products workers compared to the state-wide data for all forms of employment, where the number of workers during 1972 exceeded the average monthly employment by only 30 percent. This fairly simple bit of data, even without amplification by the "experts", should have some cogency to the informed layman; thus, we use it as an example of "applied" research. There is good reason, however, to believe that even the

Table 1. Estimated Number of Wood Products Workers in 1972

Mobility Class[a/]	SECTOR						Total
	Logging		Sawmills & Planing Mills		Plywood & Veneer Mills		
		%		%		%	
Exit	3,278	(15.3)	3,693	(9.3)	5,920	(12.0)	12,891
Entry	5,972	(27.9)	7,558	(19.0)	9,198	(18.6)	22,728
Non-Mobile	8,313	(38.8)	23,617	(59.5)	28,756	(58.1)	60,686
Seasonal	3,864	(18.0)	4,809	(12.1)	5,603	(11.3)	14,276
TOTAL	21,427	(100.0)	39,677	(100.0)	49,477	(100.0)	110,581

a/ Exit: left the industry during 1972 and did not return during that year.
Entry: entered the industry during 1972 and did not leave during that year.
Non-Mobile: received wages or salaries from the industry in all four quarters of 1972.
Seasonal: entered and left the industry during 1972.

informed and well-intentioned layman would sift this data through a set of culturally-conditioned filters in order to decide on its "true" significance. We suspect that the reasoning might go something like this:

(1) The total number of jobs in the wood products industry is expected to decline substantially over time.

(2) There is an abnormally high degree of labor turnover in this industry.

(3) If jobs are going to become scarce, why don't the workers hang on to what they've got?

(4) Excessive mobility appears to be irrational; thus the mobile workers must be somewhat deviant either in judgment or in their value systems. Ergo, the social significance of the situation is not great.

From Table 1, the degree of inter-sectoral mobility is readily apparent. In addition, not shown in Table 1 and not yet known to us, is the degree of intra-industry mobility, or inter-firm job changes within wood products. In the next few months, we plan to document a number of parameters having to do with occupational mobility, based on our state-wide sample of 210 workers (with coverage in each of the twelve cells in Figure 1). Hopefully these parameters will be useful in allowing improving public perception of the nature and magnitude of the situation. Among these parameters are the following:

(1) Extent of mobility (in and out): A refinement of Table 1, which is based only on the sampling frame.

(2) Directions of mobility (origin of entrants and destination of exits): Direction can be identified as to industry,

occupation, concurrent migration, and subsequent reversibility of direction (at time of interview in 1974).

(3) Reasons for mobility (inter-industry and inter-firm). Job changers were asked to compare old and new jobs on fifteen factors having to do with wages, employment stability, working conditions, and opportunity for advancement.

Beyond identification of these descriptive parameters, the data will be used to analyze the effectiveness of extant mobility. This can be approached in several ways, including the following:

(1) Self-perception.
(2) To or from growing or declining industry.
(3) To or from growing or declining occupational class.
(4) Benefit/cost analysis of mobility as an investment in human capital.

In addition, discriminant analysis will be used to differentiate between characteristics of two or more groupings of workers, and hence to assess the likely capacity for effective mobility of the 110,000 workers in aggregate. Moreover, we hope to be able to identify the control variables which will enhance the potential for mobility of those remaining in the declining industry. Among these groups within the exit category, for example, will be:

(1) Self-perception: "better off" vs "same or worse off."
(2) To "growth" industries versus "non-growth" industries.
(3) To "growth" occupational classes versus "non-growth" occupational classes.

Although this analysis has not yet been done, our expectations at this point are that much of the inter-industry mobility shown in Table 1 is actually horizontal mobility, or shuttling between low-

growth occupational classes. If so, the need to identify and enhance the means for upward mobility will be given additional urgency. Of equal importance will be to identify the degree to which enhancement of individual capabilities will--or will not--resolve the problem. "Bootstrap" approaches have their limits, when even augmented by increased social action to impart additional human capital to target populations. Whether the decision was a wise one or not, heavy emphasis on highway development in Appalachia reflects the possibility that macro "solutions" may dominate micro "solutions" if the New Appalachia is in fact emerging as reality [5].

The more basic portion of our research involves two areas mentioned on page 4 , i.e., (2) the functioning of the wood products labor market as an device for allocating jobs and incomes in a labor surplus setting, and (3) the interface between the labor market and adaptations made by workers in response to signals generated in that market. Obviously, these areas are not at all independent of the area of research just discussed--occupational mobility--which is, of course, an adaptation to changing circumstances. At this point, the areas are somewhat separate in a methodological sense. The research on mobility is more nearly guided by our economic training and instincts, while our inquiry into the labor market reflects inroads into our thinking made by colleagues in anthropology and sociology. (Hopefully, the latter area continues to reflect an economic input!) Even the novice may notice that the three areas are not yet adequately juxtaposed; this is our intent, though it may require some additional time.

A conventional economic approach to studying how labor markets operate would be an econometric investigation of the supply and demand structures which prevail in the market. A model containing several equations would be formulated in order to specify the influence, on wages and levels of employment, of forces arising through both the

the suppliers of labor and those who utilize labor services. Time-series data, usually highly aggregated, would be used to estimate structural parameters of the supply and demand functions. This type of analysis would allow us to better understand, for example, how rising wage levels in other sectors may help transfer labor out of wood products. It could also help in identifying the rate at which capital is being substituted for labor.

While such an analysis would be highly useful, our attention to this point has taken an alternate direction in order to wrestle with the idea of social marginalization. Inherently, this concept posits differential outcomes among individuals. These might be based on (1) different types of behavioral responses to similar economic circumstances, and/or (2) similar types of responses to different economic circumstances. If the latter is viewed, a priori, as a cogent explanation (though not necessarily to the exclusion of the former), then the differential circumstances must be identified explicitly through recognition that labor is, in fact, heterogenous rather than homogenous, as assumed in most conventional econometric work.[2/] Fortunately, the economic literature on human capital theory provides a convenient reference point. Heterogeneity of labor is conceptualized in this study in terms of human capital attributes, real or otherwise, the acquisition of which may be purposive (in economic decision-making) or otherwise. The trust of received human capital theory has been to attribute intent to the acquisition of human capital attributes (e.g., new skills or a better location). I.e., people invest in themselves through acquiring new attributes which are expected to return something in excess of the cost of acquisition. While this has proven to be a very useful concept, its usefulness can be increased (for our purposes, at least) by relaxing the assumption that intent is involved. At the same time, our understanding of how jobs and incomes are distributed (and how people

2/ In defense of economists, the assumption of general homogeneity of labor is usually made because there is often no satisfactory alternative, i.e., no time-series, dis-aggregated data for different sub-classes of labor.

adapt to a given distribution) can be expanded if we allow for a rather broad definition of human capital attributes, to include apparent "non-economic" as well as economic factors. In so doing, we allow for the creation and use, by employers, of "stereotypes" of workers in order to satisfy efficiency criteria in the operation of a firm. These stereotypes, it may be presumed, are drawn from the broadest possible set of human capital attributes, not just those purposely acquired by workers. Such a practice, it may be further presumed, is cheap and often accurate, while the costs of incorrect stereotyping are held down by the firm's ability to tap the excess labor supply.

At this point, we have derived two hypotheses which have a reasonable chance of being testable, although perhaps not fully tested with the data we have at hand. These hypotheses are:

a. Especially in a labor surplus economy, a process of "job rationing" occurs. This process arises from the private efficiency incentives of firms, is implemented through "job rationing criteria" which are mutually understood by both employers and workers, and is heavily dependent on stereotyping of workers by firms in order to minimize search costs.

b. Workers who are rationed "out" by the process adapt by changing their set of human capital attributes (e.g., changes in residence, employer, labor market, social networks, marital status, and/or participation in the work force). Some of these adaptations,while rational and efficient in a short-run sense from the individual's point of view, may be counter-productive in the long-run in that they reinforce the "out" status of the individual. The consequence is that the individual tends to become marginalized (economically obsolete, chronically unemployed, and welfare dependent) in spite of individually rational decision-making.

III. Findings to Date

A. Degree of Labor Surplus

With reference to these hypotheses, it is incumbent upon us to establish that some degree of labor surplus exists in the wood products industry. The sampling frame itself, with 1.56 employees for each job, suggests that this may be the case, but it may merely establish the existence of considerable labor mobility. Census data from 1970, in fact, indicate that the income distribution for wood products workers differs from that of all manufacturing workers primarily through having fewer people in either tail of the distribution (Table 2). Still other Census data, however, give a different impression. Of the 68,181 experienced civilian labor force (those employed plus the experienced unemployed) who indicated that wood products was their primary industry, 61,671 were actually employed at the time of Census enumeration. This sectoral unemployment rate of 9.5 percent was half again that of the state-wide unemployment rate (6.1 percent) at that time, although the seasonality of wood products employment may account for part of this differential.

Our own evidence of an impeading labor surplus comes from several sources, including personal observation of massive files of employment applications for mill and woods jobs. At one 600-person plant, we observed 800 applications; about 50 new workers had been hired in the preceeding year. While this may not establish that a labor surplus exists, it certainly establishes that employers can select from a large number of workers.

Additional evidence comes from Dr. David E. Ervin's reduced-form analysis of income determinants among the wood products workers in our state-wide study [2]. Weekly wages (W) and the number of weeks worked in wood products during 1972 (Q) were hypothesized to be determined primarily by variables that embodied human capital attributes of the workers, and also by other variables affecting either the supply of or demand for labor. In that yearly income (I) is the product of total weeks worked and weekly wages, i.e.,

Table 2. Wood Products and All Manufacturing Income Distribution in 1970

Income	Wood Products	All Manufacturing
< $4,000	11.9%	14.2%
$4,000 - $6,999	27.6%	23.0%
$7,000 - $9,999	38.4%	37.7%
≥ $10,000	22.1%	25.1%
	100.0%	100.0%

Source: Census of Population, 1970

$$I = Q \cdot W,$$

"marginal income coefficients" $(\frac{\partial I}{\partial X_i})$ could be derived for each of the human capital variables. That is,

$$\frac{\partial I}{\partial X_i} = (\bar{Q} \cdot \frac{\partial W}{\partial X_i}) + (\bar{W} \cdot \frac{\partial Q}{\partial X_i})$$

where $\frac{\partial W}{\partial X_i}$ and $\frac{\partial Q}{\partial X_i}$ are the regression coefficients from the reduced-form equations and $\bar{Q}$ and $\bar{W}$ are sectoral means for weeks worked and average weekly wages.

Estimates of the marginal income coefficients are shown in Table 3. Each value represents the expected increment in annual income, for the sector observations as a whole, given a one-unit increase in a human capital variable. One additional year's seniority with a specific sawmill firm would be worth $424.11; $176.06 of this would come about through expected increments in wages, if weeks worked were held constant. Seniority also extends the expected number of weeks worked, however, since seniority has wide acceptance in both union and non-union plants as a device determining which workers are laid off during periods of slack demand. This expected increment in income arising through an extension of weeks worked, holding wages constant, amounts to $248.05 per year.

Several inferences can be drawn from this work, all of which indicate that the rates of return to those human capital attributes which we measured are fairly low in this industry. Hence, the proposition of an impending surplus labor is supported even though average incomes in the industry are reasonably high.

First, although the marginal returns to additional work experience (firm seniority, other sector experience, and other wood products experience) were statistically significant, they range between only $110 and $585 per year. Of the alternative forms of work experience,

Table 3. Marginal Income Coefficients[a/] of Human Capital Variables

Variable[b/]	Value at Sector Means $\left(\frac{\partial I}{\partial X_i}\right) = \left(\bar{Q} \cdot \frac{\partial W}{\partial X_i}\right) + \left(\bar{W} \cdot \frac{\partial Q}{\partial X_i}\right)$		
Logging:			
Junior High School (JH)	$1,604.92	$1,604.92	$ 0
Other Sector Experience (OSE)	110.11	110.11	0
Sawmills:			
Junior High School (JH)	1,342.19	1,342.19	0
Vocational Training (VT)	238.37	238.37	0
Firm Seniority (FS)[c/]	424.11	176.06	248.05
Other Sector Experience (OSE)[d/]	262.05	262.05	0
Other Wood Products Experience (OWE)	230.72	230.72	0
Disability (D)	-2,215.64	-2,215.64	0
Plywood:			
Vocational Training (VT)	170.08	170.08	0
Firm Seniority (FS)[e/]	585.36	323.15	262.21
Other Sector Experience (OSE)	156.49	156.49	0

a/ Each value reflects the expected increment in annual wood products labor income, given a one-unit increase in a human capital variable.

b/ Experience and seniority are measured in years, vocational training in thousands of hours, junior high school and disability are bivariate (0, 1).

c/ Generalized value: $\frac{\partial I}{\partial FS} = 574.37 - 28.95(FS) - 15.65(OSE)$.

d/ Generalized value: $\frac{\partial I}{\partial OSE} = 326.37 - 15.65(FS$

e/ Generalized value: $\frac{\partial I}{\partial FS} = 669.95 - 16.67(FS)$

the returns are highest to staying with one's current employer, as might be expected. These results can be placed in an investment context. If the average sawmill worker could make $9,267 outside the industry, yet decided to "invest" in his own set of attributes by remaining with his present employer, his expected return to this investment would be 4.6 percent. Viewed in this manner, the expected returns to work experience do not exceed 6.9 percent and rise above this level only to the extent that opportunity costs fall below actual wood products incomes. Thus, the rate of return to experience has been driven fairly low by an excess supply of workers.

The returns to formal education are probably not much higher than returns to "learning by doing," and are probably bygone possibilities for most of the labor force. Our analysis indicated a diminishing return to formal education; only those with some junior high education earned significantly more than those with 8 years of schooling or less. If the benefits from this increment of formal education are assumed to occur over 50 years, the rate of return to junior high education is about 11 percent for those in logging and 10 percent for those in sawmills (Table 5). If less certainty about future earnings is assumed (and the benefit period is reduced to 15 years), the rates of return fall to 7 percent in logging and 6 percent in sawmills.

The returns to vocational training as an investment in human capital are somewhat less clear, since this involves a variety of sources and hence, a range of opportunity costs. Included within this category are trade schools, vocational classes at community colleges, correspondence courses, vocational military training, job apprenticeship, and on-the-job training. Some of these sources require an investment of leisure time and money, some are subsidized by employers and/or government, others are concomitant with work activity. For such an investment by a sawmill worker to return 8 percent over 15 years, the present value of future benefit streams would be slightly over $2,000; hence, the worker could afford to pay

Table 4. Returns to Additional Firm Seniority as an Investment in Human Capital

Sector	Average Weekly Wage	Average Weeks Worked	Average Yearly Income	Expected Income Increment, Given an Additional Year of Firm Seniority	
				at Mean Values[a/]	Entrant to Labor Force[b/]
Logging[a/]	$275.60	46.96	$12,941	$110.11 (0.8%)	$110.11 (0.8%)
Sawmills	184.29	50.29	9,267	424.11 (4.6%)	574.37 (6.2%)
Plywood	206.80	46.87	9,692	585.36 (6.0%)	669.95 (6.9%)

a/ Mean Values (Years):

	Firm Seniority	Other Sector Experience
Logging:	4.23	10.01
Sawmills:	4.11	2.00
Plywood:	5.08	1.84

b/ The expected increment would be higher for an entrant for two reasons. First, the marginal return to firm seniority declines as seniority increases, i.e., the relationship is curvilinear. Second, other sector experience and firm seniority are substitutable inputs in sawmills; skill are readily transferable between mills. (See footnotes to Table 3.)

c/ Other sector experience is much more significant in logging wage determinatinn than firm seniority; thus, that coefficient is used here. Skills appear to be even more readily transferable between firms in this sector than they are in sawmills.

Table 5. Present Value of Benefits and Opportunity Costs for Completion of 10.5 Years of Formal Education Assuming a Pay-off Period of 50 Years

Discount Rate	Benefits	Opportunity Costs
Logging:		
10 percent	$13,758	$12,624
12 percent	11,216	12,365
Sawmills:		
8 percent	$14,577	$12,005
10 percent	11,504	11,751

no more than $2.00/hour for this training. Although the use of leisure time makes comparisons difficult, we would conjecture that returns to this type of investment are probably in line with the returns to work experience and formal education.

In summary, the documentation of a current labor surplus is not as easy as it may sound. Average wage rates and incomes in the industry seem to be in line with other types of work, with relatively few people in the very low or high income classes. The industry is more subject to seasonal and cyclical fluctuations than are most other industries, yet the average number of weeks worked by our sample of workers was reasonably high in 1972. It has been somewhat easier, however, to document an incipient labor surplus. Rates of return to measured forms of human capital investment within the wood products industry appear to be low enough that one would expect two alternatives to prevail--inter-industry mobility and inter-firm mobility. Both would hinge on two factors--relative wage rates and stability of employment. Assuming away the latter, for the moment, the phenomenon of "job mobility" begins to emerge as a rational adaptation on the part of workers. Further, this is consistent with our general knowledge of the population, i.e., a high degree of internal and external labor mobility. A worker whose current wage rate is $4.00 per hour can make a 10 percent return on his investment if he has a chance for a new job at $4.40 per hour, assuming no change in costs to him (commuting or migration). Furthermore, the "interchangeability of parts" (i.e., workers) in this industrial setting facilitates job changing. In human capital terms, there is a high degree of general training, as opposed to specific training, afforded by work in the wood products industry.

B. Job Rationing Criteria

Even though the evidence on a "labor surplus" is somewhat mixed, our data do support the notion that existing jobs are rationed in a systematic manner. Our work has revealed, on the other hand, that this "systematic manner" is not always what our a priori knowledge would lead us to suspect.

The first evidence of this was our longitudinal study of workers who were put out of a job when the 155 man Clemens sawmill (near Philomath, Oregon) closed down in August, 1971. The evidence from this study suggests that these types of mill closures will act as a "centrifuge" in distributing remaining mill jobs as the Oregon wood products industry grinds toward reduced employment levels. Three types of people emerged in our sample of 40 workers--the readily re-employed, the short-term unemployed, and the long-term unemployed (Table 6). The size of the latter group (almost 1/4 of the workers) and their subsequent length of unemployment after mill closure (an average of 34 weeks) provides an indication that substantial numbers of workers in the industry would have rough sledding if and when they are faced with similar circumstances.

Judging only from the group means in Table 6, the long-term unemployed do not appear to be greatly different from the others, with the exception that half of them did have a self-declared disability. On closer inspection, the long-term unemployed did have a lower evaluation of their community, less interaction with relatives, fewer dependent children, had lived in the community longer, and had more unemployment prior to closure. A regression model to explain length of unemployment after closure, for the entire sample, showed a reduction in the explanatory power of some of the variables which appeared promising on a univariate basis (Table 7).

One can make the assumption, as we did, that these three groups are qualitatively different with respect to their ability to compete in the labor market. That is, rather than re-employability being a matter of degree, one can view it as a matter of kind. Based on this assumption, discriminant analysis was used to identify the principal ways in which these groups differed from each other on a pair-wise basis.[3/] The outcome of this analysis is shown in Table 8. When

3/ Discriminant analysis assigns a given observation to one of g mutually exclusive groups on the basis of a set of k measurements. In statistical terms, the discriminant function combines the set of k variables into a linear function in such a manner as to maximize the square of the difference between the means of the linearly transformed variables, per-unit of variance [1].

Table 6. Group Means for Three Types of Workers Displaced from the Clemens Sawmill, August, 1971

Variable	No Unemployment (n=14)	Short-Term Unemployment (2-12 wks) (n=17)	Long-Term Unemployment (19-44 wks) (n=9)
Age	41.86	41.29	43.33
Formal education (yrs.)	10.64	10.82	10.33
Disability (1=yes, 0=no)	.07	.18	.56
Evaluation of community[a/]	3.43	3.12	2.67
Interaction with relatives (from 4=a lot, 3=quite a bit, 2=a little, 1=not at all)	3.00	2.82	2.44
Years in community	18.14	22.82	25.56
Population of community in which he attended high school (thousands)	9.55	11.23	17.13
Number of dependent children (under 18 years) in household	1.57	.65	.22
Vocational or other job training (months)	8.50	6.71	9.33
Wife's income in 1970 (year prior to closure)	$ 589	$ 802	$ 170
Seniority at Clemens (years)	8.61	9.96	7.47
Years experience in sawmills	16.64	14.29	18.00
Hourly wage rate at Clemens	$3.91	$3.92	$3.81
Weeks of prior unemployment (between Jan. 1, 1968 and closure of Clemens mill)	3.14	2.59	10.22
Weeks unemployed after closure (until June, 1972)	.00	5.06	33.66

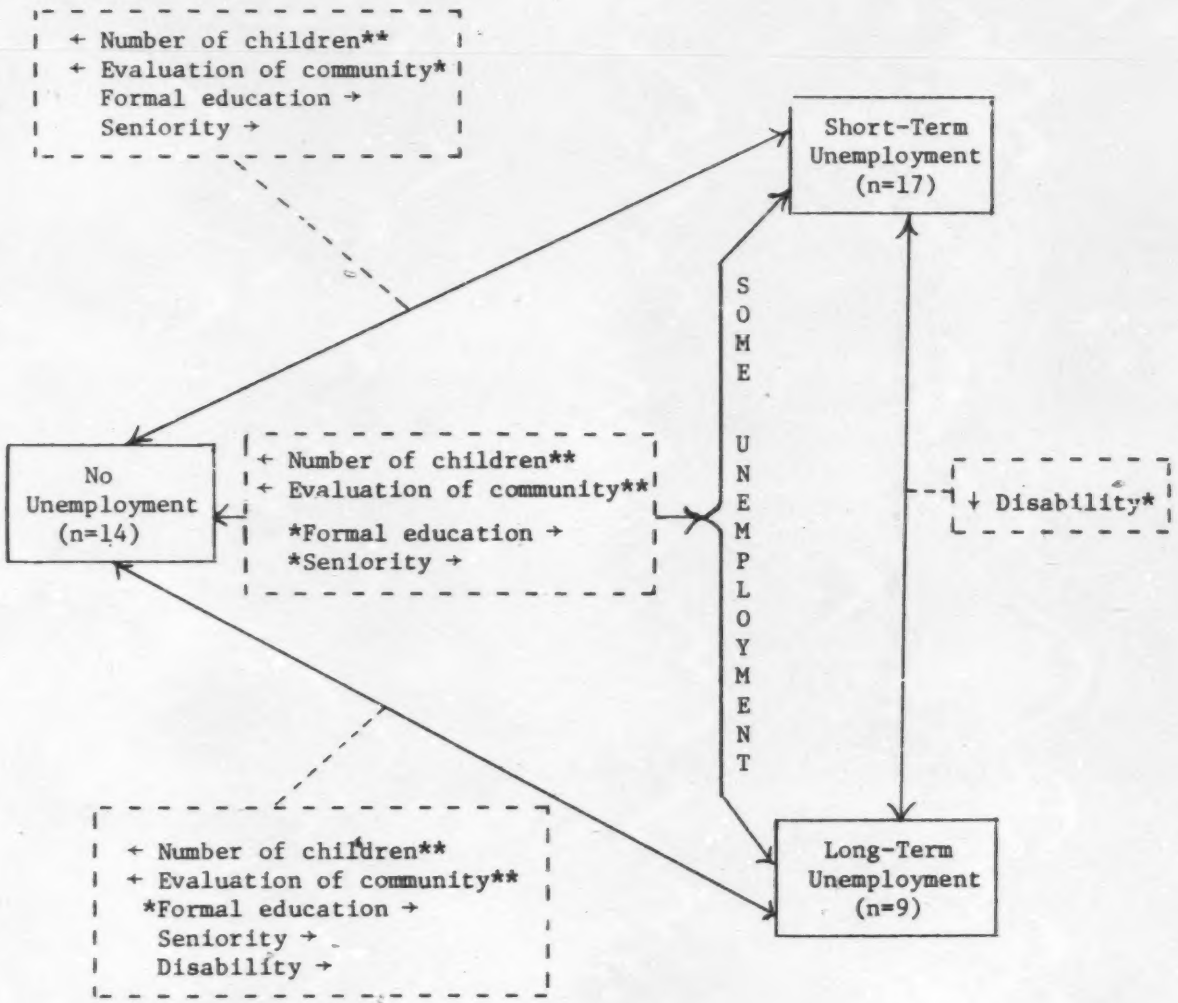
[a/] Wording of question: All in all, how would you rate this community as a place to live--as excellent, good, only fair, or poor? 4 = Excellent; 3 = Good; 2 = Only Fair; 1 = Poor or Undecided.

Table 7. Multiple Regression Analysis: Weeks Unemployed After Closure of Mill, All Workers (n=40)

Variable	Regression Coefficient	t-value
Significant		
Evaluation of Community	-7.16	-2.46*
Non-Significant, /t/ > 1.0		
Age	>0	1.34
Disability	>0	1.34
Size of (high school) Community	>0	1.26
Years in Community	>0	1.10
Non-Significant, /t/ < 1.0		
Vocational Training	>0	.98
Prior Unemployment	>0	.95
Number of Children	<0	-.87
Years of Experience in Sawmills	<0	-.79
Seniority at Clemens	<0	-.75
Wage Rate at Clemens	<0	-.60
Interaction with Relatives	<0	-.52
Wife's Income in 1970	>0	.44
Formal Education	>0	.24

R^2 = .47
d.f. = 25

Table 8. Variables Which Discriminate Between Groups of Unemployed Clemens Sawmill Workers



KEY: ← → Higher values (e.g., more children) would increase the probability of being in the group toward which arrow is pointing.

** F test: significant at .01 level.

* F test: significant at .05 level.

(If no asterisk, significant at .10 level.)

analyzed with multivariate methods, self-declared disability--the prime suspect on a univariate basis--was significant only in discriminating between long and short-term unemployment. A set of four other variables emerged as much more fundamental discriminators, including two whose signs were contrary to a priori reasoning.

Based on the discriminant analyses, several tentative conclusions can be drawn. First, there is evidence to suggest that "non-economic" variables are important in the selection process; the number of dependent children was a prime discriminator in all analyses between the readily re-employed and those with some unemployment. The hypothesis can be formed from these results that employers view this variable as a proxy for a worker's stability or expected tenure on the job. Second, formal education and seniority--both thought a priori to embody human capital attributes of value to employers--had directional effects contrary to our expectations. In that the group means for these variables are not greatly different, one has to compare the correlation matrices for the groups in order to hypothesize why this result occurred (Table 9). While our explorations in this direction have not yet been very fruitful, we do have information from field respondents that employers often equate excessive seniority with "just going through the motions." I.e., this variable apparently embodies informational content beyond our expectations.

Third, there is evidence that attitudinal questions (e.g., one's evaluation of his community) can predict re-employability. Although we recognize that this phenomenon has been tapped here in only a very superficial way, we would contend that attitudes embody a sense of powerlessness which is compatible with the thesis of social marginalization.

This somewhat superficial but promising experience with longitudinal analysis of workers under economic stress convinced us of the need for more intensive contact with workers. As a result, 23 additional workers

Table 9. Partial Correlation Coefficients of the Discriminating Variables

Group	Formal Education	Disability	Evaluation of Community	Number of Children	Seniority	
No Unemployment (n=14)		-.09	.13	.53	-.07	Formal Education
			-.19	.08	.06	Disabi ity
				-.34	-.08	Evaluation of Community
					.43	Number of Children
						Seniority

Group	Formal Education	Disability	Evaluation of Community	Number of Children	Seniority	
Some Unemployment (n=26)		-.01	.30	.06	-.48	Formal Education
			.03	-.30	-.20	Disability
				-.38	-.08	Evaluation of Community
					.31	Number of Children
						Seniority

were selected purposively from the files of job applicants at major wood products firms in Lane County, Oregon. All but one were unemployed at the time of initial interview, although most have since been re-employed.[4/] Access to these workers and to personnel managers of wood products firms have allowed us to explore more fully the dimensions of job rationing[5/]. In fact, it has been increasingly apparent that an in-depth understanding of forces exogenous to the workers must be gained before we can understand the behavior of workers with respect to these forces. I.e., to identify irreversible, marginalizing behaviors presumes knowledge of cause-and-effect relationships, some of which are external to control by the individual.

Our methodology for expanding the study of job rationing determinants has included the following steps, based on acquisition of data through anthropological field techniques:

(1) identification of possible hiring criteria for entry-level jobs in sawmills and plywood mills, through discussions with workers and personnel managers outside Lane County[6/],

(2) elicitation of rank orderings of these criteria by our sample of workers and personnel managers in Lane County,

(3) statistical analysis of these rank orderings, and

(4) an independent verification of the criteria through analysis of (i) workers actually hired, and (ii) workers not hired for positions in the same firm. (This work is still in progress.)

4/ At this point, we are still monitoring their activities and are not yet in a position to derive conclusions or hypothesis from this more intensive mode of observation.

5/ By "job rationing," we refer to the process by which one applicant is selected over another for a particular job, rather than to methods for spreading a shrinking number of jobs over the current work force (e.g., 3 and 4 day work weeks).

6/ Most jobs above entry level are filled by in-plant workers through a "bidding" process. By focusing on the entry level, we are focusing on that level where many displaced workers might have to start with a new firm, in spite of their own higher skill levels.

Although our analysis is constrained by small sample sizes and missing observations, several conclusions are starting to emerge. First, the "relevant" set of human capital attributes used for selection of new workers clearly range beyond a narrow set of "economic" variables reflecting skill level. Time and again, employers voiced concern that workers should be "stable" and "dependable." This clearly shows up in the list of variables deemed important by employers (Table 10). Second, the workers perceive that job applicants are rated on a larger set of attributes than that claimed by employers. Part of this is due to the employers' uneasiness about using criteria which may run contrary to Equal Opportunity guidelines (e.g., age and marital status), even though these may be useful predictors of worker's length of service for the firm. Third, there is considerably more agreement among employers than among workers as to rank ordering among that set of variables deemed important by the group (Table 11).

From our analyses to date, we would conclude that there is a reasonably high degree of shared perception as to how the wood products labor market operates. At this point, it appears that workers are quite cognizant of the possibility that "personal" or "social" attributes may, in fact, impinge on their economic viability (Table 12). Note especially the high rankings given by workers to stability dimensions--the length of time worked for last employer, the reason for leaving last job, and the number of employers worked for in the past five years.

C. Social Marginalization:

The implication of all this for the social marginalization thesis is the likelihood that some workers, who are probably well aware of the above dimensions, may eventually lose their economic viability through rational[7/] adaptations to the marketplace. What is "rational"

7/ Viewed from mainstream society, marginalizing behavior becomes rational if it is understandable to us in our <u>own</u> terms.

Table 10. Identification of Important Job Rationing Variables, by Workers and by Employers

A. Judged "important" by a majority of employers and workers:

- Experience in a particular job
- Name of last employer
- Length of time worked for last employer
- Reason for leaving last job
- Previous work experience with company
- Whether or not fired by a previous employer
- Auto or industrial accident history
- Whether or not person has special medical problems (e.g., back, ulcers, asthma, seizures)

B. Judged "important" by nearly a majority of employers and workers:

- Number of employers in the past five years
- Number of times a person has reported to update his application
- Completeness of application form
- Whether or not person has minor medical problems (e.g., hernia, eye trouble)
- Whether or not person has a physical disability (e.g., loss of a finger, hearing loss)

C. Judged "important" by workers (majority or close to it), but employers either judge "not important" or refuse to comment:

- Age
- Military history and type of discharge
- Marital status
- Education history
- Number of dependents
- Length of time person has lived in community
- Sufficient references given

D. Judged "not important" by employers and workers:

- Height and weight
- Length of time person has lived at his current address
- Whether or not person has close relatives working for company
- The distance a person lives from the plant

Table 11. Measures of Association: Rankings of Job Rationing Criteria, by Employers and Workers

		W[a]	$\alpha \leq$	$W_{.05}$[b]
I.	Employers (n=8)			
	(a) All 13 important variables; 2 firms excluded	.303*	.05	--
	(b) 9 of 13 important variables; all firms included	.228	.10	.242
	(c) 9 of 13 important variables; one "deviant" firm excluded[c]	.404**	.01	--
II.	Workers (n=6)			
	A. Variables Important to Workers:			
	(a) All 20 important variables; 2 workers excluded	.226	.60	.396
	(b) 15 of 20 important variables; all workers included	.237	.20	.282
	B. Variables Important to Workers and Employers:			
	(c) All 13 important variables; 2 workers excluded	.163	.80	.437
	(d) 10 of 13 important variables; all workers included	.131	.60	.313
	C. Variables Important to Workers Only:			
	(e) All 7 important variables; 2 workers excluded	.281	.40	.525
	(f) 5 of 7 important variables; all workers included	.239	.30	.395
III.	Workers and Employers (n=14)			
	(a) All 13 important variables; 2 firms and 2 workers excluded	.162	.10	.175
	(b) 7 of 13 important variables; all firms and workers included	.083	.40	.150
	(c) 7 of 13 important variables; one "deviant" firm excluded[c]	.130	>.10	.162

[a] W = coefficient of concordance.

[b] $W_{.05}$ = coefficient of concordance required for $\alpha \leq .05$.

[c] This firm had high negative rank-order correlations with 5 of the other 7 firms.

Table 12. Composite Rankings of Important Job Rationing Criteria[a/]

Variable	Employers[b/]	Workers[c/]
Previous work experience with company	1	n/r
Experience in a particular job	2	1
Completeness of application form	3	n/r
Name of last employer	4	9
Length of time worked for last employer	5	2
Whether or not person has special medical problems (e.g., back, ulcers, asthma, seizures)	6	7
Reason for leaving last job	7	4
Auto or industrial accident history	8	12
Whether or not person has minor medical problems (e.g., hernia, eye trouble)	9	10
Number of times a person has reported to update his application	10	8
Whether or not fired by a previous employer	11	n/r
Number of employers in the past five years	12	3
Whether or not person has a physical disability (e.g., loss of a finger, hearing loss)	13	6
Age	n/r	5
Education history	n/r	11
Marital status	n/r	13
Number of dependents	n/r	14
Military history and type of discharge	n/r	15

[a/] n/r = not ranked.

[b/] All 13 "important" variables were ranked, but 2 of 8 firms were excluded due to missing observations ($W = .303$, $\alpha \leq .05$)

[c/] 15 of 20 "important" variables were ranked; all workers were included ($W = .237$, $\alpha \leq .20$).

depends on what one defines as desirable, but the attainment of desirable ends ultimately depends on one's own resources or constraints. In a tight labor market, as exists in wood products, these constraints simply give an employer additional latitude to select other workers, and hence become more and more binding on the worker who is more frequently than not, selected "out" by the job rationing process. Given (1) an initial endowment of "relevant" human capital attributes, which no doubt varies over the population of workers, (2) an excess supply of labor, and (3) the profit incentive of private firms, it is hardly surprising that some workers may lose their economic viability over time. The key question is whether or not this happens in a manner which is coherent to a mainstream observer. It so, the propelling mechanism is one in which the root incentives and values derive directly from mainstream society, rather than being indigenous to marginal society.

In order to address the social marginalization hypothesis more directly, we need more time and probably more data. At present, it appears that our best prospect lies in additional observations on occupational mobility as a type of adaptation to the market. Our evidence shows that returns to investments in formal education, vocational training, and to remaining in place (i.e., firm seniority) are all relatively low. This suggests that job-changing to secure higher pay may be a very rational response to a crowded[8/] (and already dynamic) labor market, in spite of employers' desires for a "stable and dependable" worker. We know that seniority adds only moderately to income derived from weekly wages ($176 to $323 per year, on the

8/ One of the characteristics of a competitive labor market is that it provides workers a low-cost opportunity to evaluate the worth of their services in alternative uses. Hence, the market itself can provide a "public good." The attributes of any particular market can also take on a "public good" nature, which is essentially what is happening in the wood products labor market with its high degree of labor mobility. More workers leaving jobs means more opportunities for other workers to take on the vacant jobs. Hence, the dynamic nature of the market is exogenous to any one individual, but he can--and often does--take advantage of it.

average) and total weeks worked per year ($248 to $262). We also know that beyond some (as yet) undefined point, greater seniority significantly reduces one's chances of being re-employed if and when a mill closure occurs. Hence, the incentive is to become job-mobile. We suspect that there is some optimum range of job-changing, beyond which one is increasingly penalized in subsequent job markets. It is to the subtleties of this phenomenon that we are turning our attention.

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